



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,383	08/27/2003	Nobuhito Matsushiro	BD0304T	5361
7590	01/12/2005			
Takeuchi & Takeuchi 1700 Diagonal Road Suite 310 Alexandria, VA 22314			EXAMINER HINZE, LEO T	
			ART UNIT	PAPER NUMBER
			2854	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,383

Applicant(s)

MATSUSHIRO ET AL.

Examiner

Leo T. Hinze

Art Unit

2854

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2854

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 2, 7, 9 and 10, it appears that "a plurality of driver circuits" should be a --plurality of driver chips--. Fig. 2 shows a plurality of driver chips 21, but Fig. 1 only shows a single driver circuit 14. Further, it does not appear that there is a one-to-one correspondence between the number of driver chips 21 and LEE's 20 as claimed. To expedite prosecution, the examiner will interpret the claims as claiming a plurality of driver chips, each driving several LEE's.

Appropriate correction and/or clarification is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

Art Unit: 2854

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plummer, US 4,589,745 (Plummer) in view of Tanioka et al., US 6,002,420 (Tanioka).

a. Regarding claim 2:

Plummer teaches a print head comprising: a plurality of light emitting element (LEE) array chips (18, Fig. 4) arranged in substantially regular intervals in a first direction, each of said LEE array chips including a plurality of LEE's (26a-26x, Fig. 4) arranged in predetermined intervals in said first direction; and a driver circuit provided for said LEE's (col. 3, lines 30-34), wherein each of said LEE's is disposed with a deviation from adjacent LEE's in a second direction perpendicular to said first direction such that its light emitting area overlaps portions of areas of said adjacent LEE's in said second direction (Fig. 4). Plummer teaches driving the LEE's "in a well-known manner" (col. 3, lines 30-34).

Plummer does not teach a plurality of driver chips, each driving several LEE's.

Art Unit: 2854

Tanioka teaches an LED head including a plurality of LED chips (30-1, Fig. 1) and a plurality of driver chips (20-1, Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Plummer to use a plurality of driver chips, each driving several LEE's, because one having ordinary skill in the art would recognize that using a plurality of driver chips would allow greater control over the printing process, and increase the speed of the printing process by allowing multiple LEE's to light at the same time.

b. Regarding claim 3, the combination of Plummer and Tanioka teaches all that is claimed as discussed in the rejection of claim 2 above. Plummer also teaches an array which is structurally identical to one wherein an extent of said stepped-fashion is determined such that said stepped-fashion provides spatial frequency characteristics exceeding a specific spatial frequency, wherein said spatial frequency characteristics are determined by distances in said first direction between one of said light emitting device and the others of said light emitting devices and positioning differences in said second direction between said one of said light emitting devices and said others of said light emitting devices (Fig. 4).

c. Regarding claim 4, the combination of Plummer and Tanioka teaches all that is claimed as discussed in the rejection of claim 3 above. Plummer also teaches an array which is structurally identical to one wherein said spatial frequency characteristics have a predetermined frequency band width (Fig. 4).

d. Regarding claim 5, the combination of Plummer and Tanioka teaches all that is claimed as discussed in the rejection of claim 4 above. Plummer also teaches an array which is

Art Unit: 2854

structurally identical to one wherein said spatial frequency characteristics have characteristics of a blue noise (Fig. 4).

e. Regarding claim 6, the combination of Plummer and Tanioka teaches all that is claimed as discussed in the rejection of claim 3 above. Plummer also teaches an array which is structurally identical to one wherein said spatial frequency characteristics have characteristics of a line spectrum noise indicating specific spatial frequencies (Fig. 4).

Regarding claims 3-6, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. Depending upon the frequency characteristics selected in claims 3-6, the product produced by such a process could be identical to that taught by the prior art as discussed above. See MPEP § 2113.

f. Regarding claim 9:

Plummer teaches an image forming apparatus comprising: a photosensitive member (14, Fig. 1); and the print head according to claim 2 (see above rejection of claim 2).

Plummer does not teach a plurality of driver chips, each driving several LEE's.

Tanioka teaches an LED head including a plurality of LED chips (30-1, Fig. 1) and a plurality of driver chips (20-1, Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Plummer to use a plurality of driver chips, each driving several LEE's, because one having ordinary skill in the art would recognize that using a plurality of

Art Unit: 2854

driver chips would allow greater control over the printing process, and increase the speed of the printing process by allowing multiple LEE's to light at the same time.

Allowable Subject Matter

6. Claims 7 and 10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

7. Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 7 and 10, the prior art of record does not teach or render obvious a print head having all of the structure claimed, including wherein said information about said delayed time stored in said memories has such a deviation that LEE's with the same reference light emitting timing are driven with such different time periods that portions of driving times overlap each other.

Response to Arguments

9. Applicant's arguments with respect to claims 2-6 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2854

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leo T. Hinze whose telephone number is (571) 272-2167. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2854

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo T. Hinze
Patent Examiner
AU 2854
6 January 2005



ANDREW H. HIRSHFELD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800